

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Demers et al.	Att'y Docket:	1062/D85
Appl. No:	10/696,990	Art Unit:	3746
File Date:	October 30, 2003	Examiner:	Weinstein, Leonard J.
Invention:	Pump Cassette Bank		

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

Dear Sir:

Applicant respectfully submits this response and requests that the following amendments and remarks, in response to the Office Action mailed December 18, 2006, be considered.

Amendments to the Specification begin on page 2 of this paper.

A Listing of the Claims begins on page 3 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Amendments to the Specification:

Please replace the section entitled CROSS-REFERENCE TO RELATED APPLICATION(S) with the following amended section:

CROSS-REFERENCE TO RELATED APPLICATION(S)

The present application may include subject matter related to one or more of the following commonly-owned United States patent applications, each of which was filed on even date herewith and is hereby incorporated herein by reference in its entirety:

United States Patent Application No. ~~XX/XXX,XXX~~ 10/696,969 entitled SYSTEM, DEVICE, AND METHOD FOR MIXING A SUBSTANCE WITH A LIQUID (referred to herein as “Application D70”);

United States Patent Application No. ~~XX/XXX,XXX~~ 10/696,893 entitled SYSTEM, DEVICE, AND METHOD FOR MIXING LIQUIDS (referred to herein as “Application D71”);

United States Patent Application No. ~~XX/XXX,XXX~~ 10/696,818 entitled TWO-STAGE MIXING SYSTEM, APPARATUS, AND METHOD (referred to herein as “Application D72”);

United States Patent Application No. ~~XX/XXX,XXX~~ 10/697,176 entitled SYSTEM AND METHOD FOR PUMPING FLUID USING A PUMP CASSETTE (referred to herein as “Application D73”);

United States Patent Application No. ~~XX/XXX,XXX~~ 10/696,984 entitled DOOR LOCKING MECHANISM (referred to herein as “Application D74”);

United States Patent Application No. ~~XX/XXX,XXX~~ 10/697,450 entitled BEZEL ASSEMBLY FOR PNEUMATIC CONTROL (referred to herein as “Application D75”);
and

United States Patent Application No. ~~XX/XXX,XXX~~ 10/697,862 entitled PUMP CASSETTE WITH SPIKING ASSEMBLY (referred to herein as “Application D84”).

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) Apparatus for use in a fluid processing workstation having a plurality of pumps, the apparatus comprising:
 - a plurality of pump cassettes for use respectively with the plurality of pumps, each cassette having a first fluid inlet port in selective fluid communication with a first pump chamber;
 - an inlet tube; and
 - distribution tubing that connects the inlet tube to the first fluid inlet port of each of the pump cassettes.
2. (Original) Apparatus according to claim 1, wherein the inlet tube is centrally attached along the distribution tubing and the plurality of pump cassettes are symmetrically attached to the distribution tubing with respect to the inlet tube attachment.
3. (Original) Apparatus according to claim 2, wherein the attachments of the plurality of pump cassettes to the distribution tubing are equally spaced apart along the distribution tubing.
4. (Original) Apparatus according to claim 1, further comprising a plurality of incubation bags, each bag being attached to an outlet port on a respective one of the pump cassettes.
5. (Original) Apparatus according to claim 4, further comprising a bar code label on each of the incubation bags.

6. (Original) Apparatus according to claim 1, further comprising a break-away closure on the inlet tube.
7. (Original) Apparatus according to claim 1, wherein each pump cassette includes a second fluid inlet port with a second fluid inlet tube attached thereto and further including a break-away closure on the second fluid inlet tube.
8. (Original) Apparatus according to claim 1, further comprising a four-port coupling inserted in the distribution tubing such that the distribution tubing extends out from first and second oppositely located ports of the coupling, the first fluid inlet tube is connected to a third port of the coupling and the first fluid inlet port of a middle one of the pump cassettes is coupled to a fourth port of the coupling.
9. (Original) A pump cassette bank comprising:
 - an odd number of pump cassettes, each cassette having a working solution inlet port selectively coupled to a working solution pump chamber;
 - a working solution inlet tube; and
 - distribution tubing connected between the working solution inlet tube and the working solution inlet ports of the odd number of pump cassettes, wherein the working solution inlet tube joins the distribution tubing proximate to a junction between the distribution tubing and a middle one of the pump cassettes such that connected to the distribution tubing on either side of the junction are an equal number of the pump cassettes.
10. (Original) The pump cassette bank of claim 9 wherein the pump cassettes connected to the distribution tubing on one side of the junction are spaced from the junction given distances from the junction and wherein at those given distances pump cassettes are connected to the distribution tubing on the other side of the junction.

11. (Original) The pump cassette bank of claim 9 further comprising a plurality of incubation bags, each bag being attached to an outlet port on a respective one of the pump cassettes.
12. (Original) The pump cassette bank of claim 10 further comprising a bar code label on each of the incubation bags.
13. (Original) The pump cassette bank of claim 9 further comprising a break-away closure on the working solution inlet tube.
14. (Original) The pump cassette bank of claim 9 wherein each pump cassette includes a second fluid inlet port with a second fluid inlet tube attached thereto and further including a break-away closure on the second fluid inlet tube.
15. (Original) The pump cassette bank of claim 9 further comprising a four-port coupling inserted in the distribution tubing such that the distribution tubing extends out from first and second oppositely located ports of the coupling, the working solution inlet tube joins the distribution tubing through a third port of the coupling and the working solution inlet port of a middle one of the pump cassettes is coupled to a fourth port of the coupling to form the junction with the distribution tubing.
16. (Original) A pump cassette bank comprising:
 - a plurality of pump cassettes, each pump cassette having a first inlet port and an associated first pump chamber, a second inlet port and an associated second pump chamber, an air vent and associated hydrophobic filter, and an outlet port;
 - a working solution inlet tube; and
 - distribution tubing connected between the working solution inlet tube and the first inlet ports of each of the plurality of pump cassettes, wherein the working solution inlet tube is centrally connected to the distribution tubing such that connected to the distribution tubing on either side of a junction between the distribution tubing and the working solution inlet tube are an equal number of the pump cassettes.

17. (Original) The pump cassette bank of claim 16 wherein the pump cassettes connected to the distribution tubing on one side of the junction are spaced from the junction given distances from the junction and wherein at those given distances pump cassettes are connected to the distribution tubing on the other side of the junction.
18. (Original) The pump cassette bank of claim 16 further comprising a four-port coupling inserted in the distribution tubing such that the distribution tubing extends out from first and second oppositely located ports of the coupling, the working solution inlet tube is connected to a third port of the coupling to form the junction between the distribution tubing and the working solution inlet tube and the first inlet port of a middle one of the pump cassettes is coupled to a fourth port of the coupling.
19. (Original) The pump cassette bank of claim 18 further comprising a plurality of incubation bags, each bag being attached to an outlet port on a respective one of the pump cassettes.
20. (Original) The pump cassette bank of claim 19 further comprising a bar code label on each of the incubation bags.
21. (Original) The pump cassette bank of claim 18 further comprising a break-away closure on the working solution inlet tube.
22. (Original) The pump cassette bank of claim 18 further comprising a second fluid inlet tube attached the second inlet port on each of the pump cassettes and further including a break-away closure on each of the second fluid inlet tubes.
23. (Original) A kit comprising:
a plurality of pump cassettes, each cassette having a first fluid inlet port in selective fluid communication with a first pump chamber; and

an inlet tube and associated distribution tubing for connecting the inlet tube to the first fluid inlet port of each of the pump cassettes.

24. (Original) A kit according to claim 23, further comprising:

a plurality of incubation bags for attachment respectively to an outlet port of each of the pump cassettes.

25. (Original) A kit according to claim 23, further comprising:

a four-port coupling for insertion in the distribution tubing such that the distribution tubing extends out from first and second oppositely located ports of the coupling, the first fluid inlet tube is connected to a third port of the coupling and the first fluid inlet port of a middle one of the pump cassettes is coupled to a fourth port of the coupling.

REMARKS/ARGUMENTS

Applicants wish to thank the Examiner for the review of the present application. Claims 1-25 are currently pending in the application.

Claim Rejections Under 35 U.S.C. §102

Claims 1-4, 8, and 23-25 stand rejected under 35 USC 102(a) as being anticipated by U.S. Patent Number 7,011,743 (Rosiello, hereinafter "Rosiello"). Additionally, claims 9-11, 13, and 16-17 stand rejected under 35 USC 102(b) as being anticipated by U.S. Patent Number 5,482,440 (Dennehey et al., hereinafter "Dennehey").

In order for prior art to anticipate a claim under 35 U.S.C. §102, the prior art must disclose each and every limitation of the claim. Applicant respectfully submits that Rosiello and Dennehey fail to disclose each and every limitation of the claims.

Claim 1, in relevant part, describes apparatus for use in a fluid processing workstation having a plurality of pumps. The apparatus includes a plurality of pump cassettes for use respectively with the plurality of pumps, each cassette having a first fluid inlet port in selective fluid communication with a first pump chamber; an inlet tube; and distribution tubing that connects the inlet tube to the first fluid inlet port of each of the pump cassettes. As discussed in the subject patent application (e.g., at page 9, line 26 – page 10, line 2), such a configuration of pump cassettes and connective tubing may be provided as a disposable unit or kit and allows all of the pumps to draw fluid from a single source.

Specifically, Rosiello includes a distribution section 40 having a plurality of fluid management cassettes 42 and a peristaltic pump 44. Rosiello's fluid management cassettes do not include pump chambers and do not pump fluids, but instead include various valves, a pressure sensor, and an optical sensor for managing fluid that is pumped by the peristaltic pump 44. Thus, Rosiello's fluid management cassettes 42 are not pump cassettes that are used respectively with a plurality of pumps, as required by the present claims. In comment #5, the examiner points to the rectangular box in the cassette, which is an optical sensor, not a pump chamber. Thus, nowhere does Rosiello teach or suggest

that the fluid management cassettes (42) have an inlet port in selective communication with a first pump chamber, as required by claim 1.

Accordingly, claim 1 is allowable over Rosiello. In addition, because a dependent claim is deemed to include all limitations of its base claim and any intervening claim, Applicants respectfully submit that dependent claims 2-4, and 8 are also allowable over Rosiello.

In a manner similar to claim 1, claim 23 also includes pump cassettes that have an inlet port in selective communication with a first pump chamber. Therefore, for the reasons stated above with regard to claim 1, Applicants respectfully submit that claims 23-25 are also allowable over Rosiello.

Claim 9 describes, in relevant part, an odd number of pump cassettes, each cassette having a working solution inlet port selectively coupled to a working solution pump chamber; a working solution inlet tube; and distribution tubing connected between the working solution inlet tube and the working solution inlet ports of the odd number of pump cassettes, wherein the working solution inlet tube joins the distribution tubing proximate to a junction between the distribution tubing and a middle one of the pump cassettes such that connected to the distribution tubing on either side of the junction are an equal number of the pump cassettes. Thus, the configuration of cassettes and tubing in claim 9 provide a fluid path from the inlet tube to all of the cassettes.

Similar to Rosiello, Dennehey's cassettes are not pump cassettes that include pump chambers, but are really fluid management cassettes that include valve stations, pressure sensing stations, and channels or paths for conveying liquids (see Dennehey's FIGs. 4-5 and supporting description at column 7, lines 41-46). Dennehey's assembly includes a fluid path conveying blood between the source and the separation element. Several blood cassettes are located within the fluid path. However, nowhere does Dennehey teach or suggest that the blood cassettes have an inlet selectively coupled to a working solution pump chamber. The Examiner suggests that elements F8 and F9 constitute working solution pump chambers. However, elements F8 and F9 of Dennehey are liquid paths, not chambers. As known in the art, the term chamber typically refers to an enclosed space and/or an enlarged part of a passage. In contrast, the liquid paths (F8

and F9) in Dennehey are merely the passages through which the blood passes within the cassette.

In addition, Dennehey also fails to teach the working solution inlet tube and distribution tubing configuration required by claim 9. Specifically, Dennehey does not teach or suggest a working solution inlet tube that joins distribution tubing proximate to a junction between the distribution tubing and a middle one of the pump cassettes. Claim 9 requires that a single working solution inlet tube (e.g., *a working solution inlet tube*) join the distribution tubing proximate to a junction between the distribution tubing and a middle of one of the pump cassettes. In contrast, the Dennehey system has essentially 5 separate working solution tubes leading to the cassettes. As best shown in Figure 19, Dennehey has several tubing branches (38, 40, 42, 44, and 46) coming from a processing chamber (16) and leading to an umbilicus (24). Several additional sections of tubing (60, 76, 64, 86, and 80) extend from the umbilicus to the fluid cassettes (22A, B, and C). The Examiner suggests that the umbilicus (24) constitutes the working solution inlet tube. However, the umbilicus has a very distinct structure and cannot constitute the working solution inlet tube. The umbilicus includes 5 distinct lumens (e.g., flow paths) corresponding to each of the tubes entering and exiting the umbilicus (see Figure 16). At no point are the tubes a single working solution tube, as required by claim 9. Thus, nowhere does Dennehey teach or suggest the working solution tube/distribution tubing configuration required by claim 9.

Accordingly, claim 9 is allowable over Dennehey. In addition, because a dependent claim is deemed to include all limitations of its base claim and any intervening claim, Applicants respectfully submit that dependent claims 10-11, and 13 are also allowable over Dennehey.

In a manner similar to claim 9, claim 16 also defines pump cassettes that have a similar working solution inlet tube/distribution tubing configuration. For the reasons stated above with regard to claim 9, Applicants respectfully submit that claims 16-17 are also allowable over Dennehey.

Claim Rejections Under 35 U.S.C. §103

Claims 1, 9, 15-16, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosiello in view of Dennehey.

As discussed above, claim 1 is allowable over Rosiello because Rosiello fails to disclose an inlet port in selective communication with a first pump chamber. In addition, Dennehey fails to teach the deficiencies of Rosiello. Specifically, as discussed above, Dennehey also fails to disclose, among other things, an inlet port in selective communication with a first pump chamber. Thus, since neither Rosiello nor Dennehey teach or suggest all limitations of claim 1, the combination cannot make claim 1 obvious.

In a manner similar to claim 1, claims 9 and 16 also define pump cassettes that have an inlet port and a first pump chamber. For the reasons stated above with regard to claim 1, Applicants respectfully submit that claims 9, 15-16, and 18-19 are also allowable over the combination of Rosiello and Dennehey.

Claims 5, 12, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosiello and Dennehey as applied to claims 1, 9, and 16 above, and further in view of U.S. Patent Number 6,245,570 (Grimm et al., hereinafter "Grimm"). As dependent claims of 1, 9, and 16, claims 5, 12, and 20 include all of the limitations of the claims from which they depend. Therefore, claims 5, 12, and 20 are allowable over the combination of Rosiello and Dennehey for at least the same reasons discussed above.

The office action states that Rosiello and Dennehey do not provide for a bar code label on each of the incubation bags. The office action adds Grimm to teach this limitation. However, as discussed below, Grimm fails to teach the deficiencies of Rosiello and Dennehey.

The Grimm patent is directed towards a container for irradiation of blood products. The Grimm container has a flexible, flat collapsible wall defining a sealed chamber. Nowhere does Grimm teach or suggest the inlet port and pump chamber required by claims 1, 9, and 16. Thus, since neither Rosiello, Dennehey, nor Grimm teach or suggest all of the limitations of claims 5, 12, and 20, the combination cannot make obvious the claims.

Claims 6, 7, 14, and 21-22 are rejected under 35 U.S.C, 103(a) as being unpatentable over Rosiello and Dennehey as applied to claim 1, 9, and 16 above, and further in view of U.S. Patent Number 5,098,371 (Juji et al., hereinafter "Juji"). As dependent claims of 1, 9, and 16, claims 6, 7, 14, and 21-22 include all of the limitations of the claims from which they depend. Therefore, claims 6, 7, 14, and 21-22 are allowable over the combination of Rosiello and Dennehey for at least the same reasons discussed above.

The office action states that Rosiello and Dennehey do not teach a system having a four-port junction and break away closures on the working solution inlet tube. The office action adds Juji to teach these limitations. However, as discussed below, Juji fails to teach the deficiencies of Rosiello and Dennehey.

Juji is directed towards a switch bag type blood gathering set. The Juji set includes a number of members for gathering and storing blood. The members are connected by tubes to prevent the blood from contacting the outside air. However, nowhere does Juji teach or suggest the inlet port and pump chamber configuration required by claims 1, 9, and 16. Thus, since neither Rosiello, Dennehey, nor Juji teach or suggest all of the limitations of claims 6, 7, 14, and 21-22, the combination cannot make obvious the claims.

Conclusion

For the reasons stated above, Applicants respectfully submit that all pending claims are in a form suitable for allowance. Therefore, the application is believed to be in a condition for allowance. The Applicant respectfully requests early allowance of the application. The Applicant requests that the Examiner contact the undersigned, Jeffrey T. Klayman, if it will assist further examination of this application.

Applicants petition for a one month extension of time. In the event that a further extension is needed, this conditional petition of extension is hereby submitted, and Applicants request that deposit account number 19-4972 be charged for any fees that may be required for the timely consideration of this application.

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Reply to Office action of December 18, 2006

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Respectfully submitted,



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